



## “FRAPPY” {Free Response AP Problem...Yay!}

The following problem is taken from an actual Advanced Placement Statistics Examination. Your task is to generate a complete, concise statistical response in 15 minutes. You will be graded based on the AP rubric and will earn a score of 0-4. After grading, keep this problem in your binder for your AP Exam preparation.

Two antibiotics are available as treatment for a common ear infection in children.

- Antibiotic A is known to effectively cure the infection 60 percent of the time. Treatment with antibiotic A costs \$50.
- Antibiotic B is known to effectively cure the infection 90 percent of the time. Treatment with antibiotic B costs \$80.

The antibiotics work independently of one another. Both antibiotics can be safely administered to children. A health insurance company intends to recommend one of the following two plans of treatment for children with this ear infection.

- Plan I: Treat with antibiotic A first. If it is not effective, then treat with antibiotic B.
- Plan II: Treat with antibiotic B first. If it is not effective, then treat with antibiotic A.

### **Scoring:**

(a) If a doctor treats a child with an ear infection using plan I, what is the probability that the child will be cured? If a doctor treats a child with an ear infection using plan II, what is the probability that the child will be cured?

**E P I**

(b) Compute the expected cost per child when plan I is used for treatment.  
Compute the expected cost per child when plan II is used for treatment.

**E P I**

(c) Based on the results in part (a) and (b), which plan would you recommend? Explain your recommendation.

**E P I**

**Total: \_\_/4**